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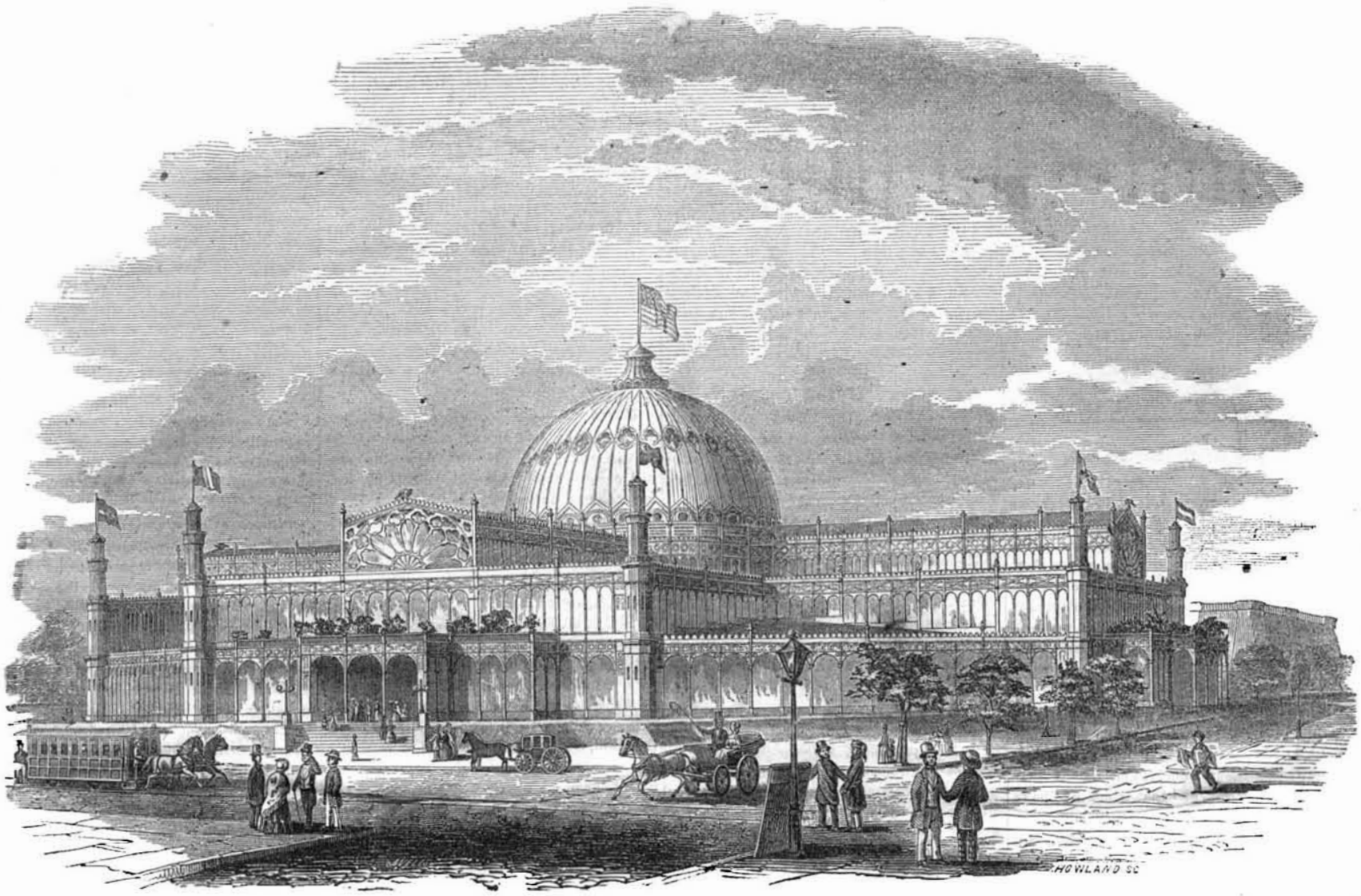
NEW YORK CRYSTAL PALACE FOR THE EXHIBITION OF INDUSTRIAL PRODUCTS.



At great expense this beautiful view of the New York Crystal Palace has been drawn and engraved expressly for the Scientific American. Among the many designs exhibited to the "Association for the Exhibition of Industry," that of Messrs. Carstensen & Gildmeister, of this city, was accepted, and it is here presented to our readers. The outside form of the building is that of a Greek cross.

Each diameter of the cross will be 365 feet 5 inches long. There will be three similar entrances—one on the Sixth avenue, one on Fortieth, and one on Forty-second street.—Each entrance will be 47 feet wide, and that on the Sixth avenue will be approached by a flight of eight steps. Each arm of the cross is, on the ground plan, 149 feet broad, this is divided into a central nave and two aisles, one on each side—the nave 41 feet wide—each aisle 54 feet wide. On each front is a large semicircular fan-light 41 feet wide and 21 feet high. The nave or central portion is 67 feet high, and is of an arch 41 feet in diameter. There are to be two arched naves crossing one another at right angles. The exterior width of the ridgeway of the nave is 71 feet. The central dome is 100 feet in diameter—68 feet inside from the floor to the spring of the arch, and 118 feet to the crown; and on the outside, with the lantern, 149 feet. At each angle is an octagonal tower, eight feet in diameter, and 75 feet high. Each aisle is covered by a gallery of its own width, 24 feet from the floor.

The number of the columns on the ground floor will be 190, all hollow and of 8 inches diameter, and of different thicknesses from ½ to 1 inch. On the gallery floor there will be 122 columns, and the whole structure will be constructed of glass and iron.

This Palace is to be erected at Reservoir Square, in this city, a place granted to the Association at a nominal rent for the term of five years. It is situated about two miles from the City Hall, and persons will be enabled to reach it from the lower part of the city in half an hour.

The building will be octagonal, the double cross being the galleries. With the three public entrances there will also be a private entrance. The ground floor is divided into four compartments separated from one another by the naves and transepts running at right angles with two tiers of galleries. The whole of the building is to be lighted by the large dome in the centre.

The building will be seen for a considerable distance, and it will command an extensive view of the city. It will be a larger building than any ever erected in our country, and will contain, on its ground floor, 111,000 square feet of space, and in its galleries, which are 54 feet wide, 62,000 square feet more, making a total area of 173,000 square feet for the purposes of exhibition. The interior view of this building will be larger and more expansive than any structure in our land, and those who have been astounded with the first view of a great assembly under a huge tent, will, when they first behold the inside of this structure next year, teeming with a living moving mass of congregated thousands "hold their breath for a time." There are larger buildings in the world, such as St. Peter's at Rome, and it is small in proportion to the London Crystal Palace, still it will be "a thing of beauty," and will attract thousands upon thousands to this city who never visited it before. It is now a subject of common conversation in the remote districts of this great and growing country, and already have young men and old men, too, begun to lay by a few shillings weekly or monthly that they may be enabled to come from the far prairie and backwoods to see the Crystal Palace in New York.

Measures have been adopted to obtain the exhibition of goods and articles from all parts of the world. The inhabitants of all nations have been invited to become exhibitors, and it will certainly be a matter of no small interest for the Egyptian, who boasts of his country as the cradle of civilization, to meet here and shake hands with his brother Yankee, who boasts of his country as the model of civilization—a country, too, which three hundred years ago was trod only by the foot of savage man, whose habitation was only the wigwam of branches or the cave in the cleft of the rock.

We understand that the castings have all been contracted for and given out, and the utmost energy is being displayed to have the building completed so as to be opened by the 3rd of May. Men are now busily engaged on the foundations; great activity, however, will have to be displayed to have it finished at the time promised; indeed, we believe it will not be done, for so many contractors will, in all likelihood, fulfill the old saying, "too many cooks spoil the soup." However, we hope they will all get their work done in time, and done well, but it is a very different thing to have the work done all by one large firm like Fox & Henderson, than to have it done by a number of independent companies. We being democratic, however, in our notions, like to see large contracts divided up, so as to give every one a share of the spoils; but here will we hold, we do not believe that any of the contractors will grow very fat on their profits. We expected that the plan of Mr. Bogardus, of this city, would have been selected, and the contract given to him exclusively. His inventive talents, and his great experience (in fact he is the only practical man in our country) in the construction of iron buildings; his superior patented mode of arching, bracing, and uniting the different parts together, pointed him out to us as "the man for the hour." The Committee of the Association thought differently from us, and we do not presume to know their business so well as they do themselves; but one thing we will say, and that as a prediction, the building will cost the company far more than what it would have been contracted for as a total, by "the American inventor of cast-iron buildings."

Since we are to have a World's Fair in New York next year, we now hope it will be an honor to our country, in every respect. We have not altered the views hitherto expressed, respecting the objects which led to the erection of this building and the holding of a World's Fair in this city. But we now hope that our countrymen of every art and trade are preparing themselves to exhibit machines and apparatus which will make us proud of their genius and artistic skill. We have seen it stated that England will do everything to decry our effort; such language exhibits a silly fear, in which there is not the least necessity for indulging. From time to time, as matters of interest *turn up*, we will report progress to our readers; we shall keep them posted up on all things new, and the Scientific American is determined to keep up its first and prominent position in making the best reports, and illustrating the newest and most interesting machines, &c,

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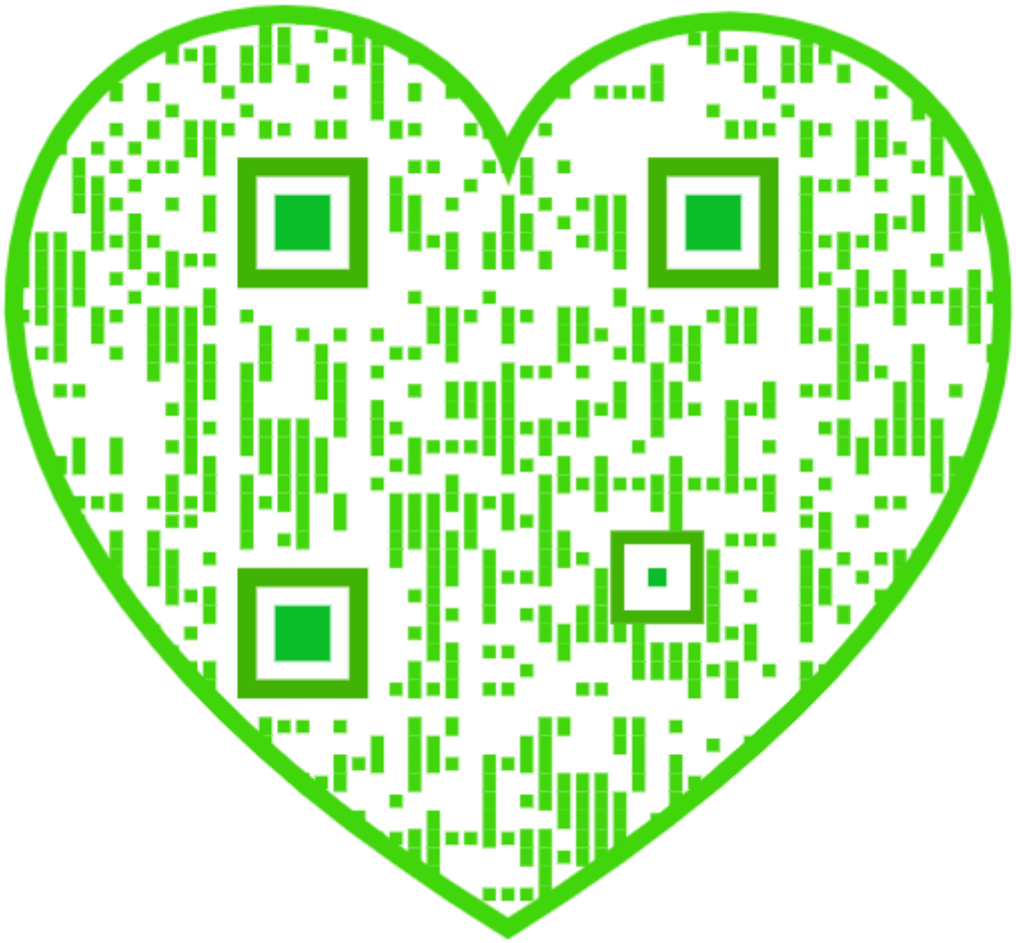

that will be displayed in this great American Crystal Palace. We have named this building the American Crystal Palace, not after the European fashion which gives that name to royal residences, and those which have been honored with royalty sleeping in them, but because it will be taken possession of by a whole army of old and young American kings and queens next year. We do not expect to see them carried to it in carriages drawn by cream colored Arabian horses, but in the royal cars of the Sixth avenue railroad which will take as many passengers as may choose to go, from Chambers street to the Palace, for only one five-cent piece each. We should all be glad if Queen Victoria would come over here to pay us a visit and see our "New York World's Fair;" she would meet with a really true and kind welcome: American gallantry would exhibit itself in manly respect and dignified courtesy. We are confident that she would go away heartily pleased with her American cousins, who believe her to be a good wife and mother, and a great deal better *man*, so far as good sense and the government of her people are concerned, than many men who have a considerable reputation for statesmanship.

We will furnish stereotype cuts of the above beautiful engraving for the low price of $10 each. This we do to remunerate ourselves in part for the great expense we have incurred in securing it in advance of all other publications.

MISCELLANEOUS.

Fair of the American Institute.

[Continued from page 34.]

According to our promise of last week, we have given, in the present number of the Scientific American, a more extended account of the various objects on exhibition at the Fair. For the better convenience of reference, these are classified under separate heads, so that our readers may be able to discern at a glance those subjects that are more particularly interesting to themselves.

RAILROADS.

Under this head are placed those inventions that have reference to locomotive travelling, and two divisions of it are particularly rich in new inventions, namely, that for the purpose of Ventilation, and that which we have assigned to Brakes.

Ventilation of Railroad Cars.—Here we have two leading principles by which most of the inventors appear to have been actuated—either of admitting the air by the top or else by the under-side of the car; we shall, however, give a description of each invention separately, and leave it to the Judges to decide to whom the premium is due—"*Palmam qui meruit ferat.*"

Mr. Paine was there, of course, with his ventilating apparatus, but as his plan has already been fully described and illustrated by us on page 244, Vol. 7, it will be unnecessary to say anything further upon the subject.

A. R. Church, of Dansville, Ohio, obtains his mode of ventilation by means of a large pipe placed on the top of the car with a funnel at the end to catch the wind. A small pipe connected with the above is carried round the outside of each window with an open groove in the centre; this latter, by giving a vent for the wind, causes a current of air that prevents the dust from blowing into the car, acting in fact as a counter-current.

In Daniel Flynn's arrangement, underneath the car is fixed a refrigerator filled with ice or water, which purifies the air above intended for ventilation, there being between the floor of the car and the refrigerator a false bottom. At the top of the refrigerator are two self-acting valves, one of which is closed when the other is open. By this means fresh air is supplied to the car, from underneath the flooring, through apertures furnished with registers to moderate the current at pleasure. The foul air is driven out by the windows and thus prevents the entrance of dust. In case the windows are shut, there is a series of self-acting valves above which answer the same purpose, and which can be severally closed by a handle inside, at the option of each passenger.

Mr. Jeffrey's invention consists in a long flexible tube, running the whole length of the train from the fire-box of the locomotive, with branch pipes let into the top of each car, the commencement of the pipe near the engineer being funnel-shaped, so that the air can easily rush in. There is one objection to this plan which struck us particularly, and for which we do not recollect to have seen any remedy: should the engine be pushing the train, instead of drawing it, the apparatus would of course be of no avail.

The plan of W. Atwood, of Waterbury, Ct., consists of a rectangular frame-work placed before the door of each car, of a larger size than the latter, and made, apparently, of textile india rubber. It will thus be seen that when two cars are coupled the india rubber framing of both, which is shaped like a bellows, closely approach each other, and prevent the admission of the dust, while the air can pass through.

Clinton Roosevelt has a plan which consists of a fan and bellows on the top of the car, one at each end, which are driven by bands connected to the wheels, the one for rapid and the other for slow motion. Another invention of the same party consists in obtaining the necessary ventilation by fixing at the ends of the car a frame-work of buck-skin leather, which is sufficiently porous to allow the air to pass through, and yet can exclude the dust. This latter point is almost as great a desideratum as the ventilator, for no one travelling much on railroads can fail to find the dust an intolerable nuisance.

J. C. Symmes, of West Troy, N. Y., presents a car with a gable-shaped roof, forming an air vessel at the top of the carriage; a rectangular funnel at one end, and a species of shutter-blind at the other, complete the arrangement.

As we are on the subject of ventilation, we may as well, in this place, make reference to Robinson's Ship Ventilator, which is also on exhibition, but which we do not consider valuable in every instance, especially where foul air has been permitted to accumulate in the holds of ships. For ordinary purposes it may, perhaps, be of use, but we do not think that it would be found effectual in all cases.

Railroad Brakes—The Brakes which we saw—and they are rather numerous—fail in one important particular, viz.—originality; they are nearly all similar in the main principle to the brake in common use. In fact they nearly all act on the system of forcing a segment of a ring of wood or iron against the periphery of the wheel, which, it is well known, is far from being *a new idea.* The system of levers, by which such a result is effected, is a mere secondary consideration, and combinations of them may be made *ad infinitum*, without entitling the contrivers to the honorable name of an inventor. We may be asked, "What then would you have?" We reply, "*Something of which nobody has hitherto thought,*"—and that is what we call an invention.

But to return to a description of the articles before us, something original we have in Jackson's long action brake, in which, discarding the idea of friction against the wheel, he applies the pressure against the rail by means of a long bar extending nearly the whole length between the axles of the car. This is raised or forced down by levers. There are objections to this plan, one of which is, that it might have a tendency towards throwing the cars off the rail.

Hand and Steam Brake—By T. Walker, of New York.—This invention consists in applying the brake blocks to each side of each wheel, thereby more effectually equalizing the strain on the axles and wheels. In order to be worked either by hand or steam, the brake is fitted with an apparatus by which each car can be stopped by hand without interfering with the action of the steam on the brakes, thus rendering the steam and hand-breaking power independent of each other.

Henry Olds, of New Haven, Ct., exhibits a brake, intended to exert against the wheel more or less pressure, as required, which is effected by forming the brake in the shape of the letter C, and suspending it from a joint, not exactly in the middle of the arc, so that more or less of the periphery of the wheel is subjected to the pressure of the brake as required. The patentee has connected with this brake a mode of ventilating cars, expecting the wheel to act as a fan in drawing off the air, whilst fresh air is admitted from the bottom, passing through a layer of sponge to deprive it of dust, &c.

A. A. Church, of Painesville, Ohio, effects the application of the brake by the operation of two men stationed in front of the engineer, who let fall a friction wheel on the track by means of a lever, and which winds up a chain connected by rods to the brake. The brake consists of slides which press upon the rail when it is required to stop the train.

Car Wheel—By H. Gardiner, of Schoharie, N. Y.—This is a good strong wheel, with wrought-iron spokes, but we observed nothing new about it.

Railroad Car Seat—By A. B. Buell, of Westmoreland, Oneida Co., N. Y.—(See page 305, Vol. 7). The nature of this improvement consists in attaching to the backs of the ordinary car seats outer sliding backs, which may be raised or lowered as required. By this means there is obtained a very compact car seat, with a back equal to a concaved high-backed chair, and it is so arranged that two persons sitting on the same seat, who may choose to have the backs at different elevations, can be accommodated to their heart's desire.

W. Warren, of Cincinnati, Ohio, exhibits two new seats, which, for convenience, change of form, and adaptation to different postures, are superior to anything that we have hitherto seen.

Guard Cars—By Booth & Ripley, of Troy, N. Y.—This is an elaborate contrivance to receive the first shock of anything on the road, and consists of a huge clumsy-looking iron car stationed in front of the train.

We also noticed two passenger cars of sheet-iron, which have the advantage of extreme lightness—one by Thomas E. Warren, of New York, illustrated and described on page 388, Vol. 6, Scientific American; the other by M. C. Butler, of New York.

The fearful accidents which occur from cars running off the track or the breaking of an axle, has caused several contrivances to prevent this danger. Wm. Gee, of 66 Gold st., N. Y., has a pencil sketch of an invention of this kind, and has affixed letters of reference with it, but has neglected to give the corresponding explanation; so far, however, as we can understand his drawing, he proposes to form the wheel with a recess of large diameter, into which he fits a strong circular plate, having a box working loosely on the axle, and enabling it to be clamped to the framing; a strong plate is screwed against the inner side of the wheel to keep the whole secure. Should the axle break it is evident that the wheel will be retained in its place.

A. L. Finch, of New Haven, Conn., has a plan with a similar intention; he encloses the wheel in a sort of frame, which, of course, would be similarly effectual.

Station Indicator.—By M. F. Potter, of Charlemonnt, Massachusetts.—The owner of this invention is not so ambitious in his aspirations, he aims only at benevolently preventing unlucky or heedless passengers from being carried beyond their destination. For this purpose he has a species of scale inscribed with the names of the various stations on the road, and a variety of other information. This scale is suspended near the roof of the car, and when a station is approached, the name on the scale is brought forward; when the station is passed, the name is rolled up out of sight, and the next place brought under notice. The operation is effected by means of toothed wheels set in motion by the axle. We fear that the slip of the wheel is liable to deteriorate from its efficiency.

Engine and Car Truck—By Edwin Stanley.—This truck, in addition to the usual advantages, is also intended to act as a relief to axles and outside rails at curves, as well as a brake, which is thus effected:—the truck has independent bearings or springs and also a guarded lateral motion, allowing the flanges of the running wheels to only touch the outside rails.

Self-directing Railroad Cars—By Lander & Harding.—The principle embraced in this invention is, first, an independent motion to the opposite wheels, by means of separate axles; second, the bringing the axles into the line of the radii of the curve, thereby causing the wheels to follow the same on a curved or straight road.

Compound Car Axle—By P. G. Gardiner, of New York.—This appears to be an ingenious invention to overcome the difficulty which occurs from the wheels being keyed on to the axle. It is obvious that when traversing a curve, the wheel on the rails which has the smallest radius requires to move at a less velocity than the other. The impossibility of doing this is a fruitful source of accidents, but is obviated by this plan. An axle box, somewhat similar to that used for wagons, is placed on the axle, and on this box the wheel is secured. The axle box is held in its place by a V-shaped collar, a rim of metal to correspond with the inner edge of the V is screwed on to the box, which can thus be made to act as a species of friction clutch. In ordinary cases the axle itself will revolve, but should a sudden strain occur in a curve, the axle box will work loose, and the wheel thus be enabled to acquire the diminished velocity required.

Self-adjusting Railroad Switch—By R. H. Middleton, of New York.—The right or the left wheel of the car, according to which line of rails it is upon, on approaching the switch, acts upon a short lever, so arranged that the wheel, in passing presses it down, and thus the switch is adjusted to receive the train.

STEAM MACHINERY.

The steam engine and its numerous appendages attract the lively curiosity of visitors, whilst the boilers give a practical illustration of the mode of setting recommended by Dr. Griffin.

Stillman's Gauges are attached, as they usually are, to all well-managed boilers, and we noticed a neatly-made counter fixed to the engine, which was rapidly numbering its quick strokes. We are glad to see this excellent little invention of James Watt brought forward for the use of land engines, and regret the omission of an Indicator. Sloan & Leggatt's Hydrostat is attached to the Boiler, and gives ample proof of its efficiency in regulating the supply of feed-water.

Mr. Morris, of Duane street, N. Y., has a model of an engine with two oscillating cylinders inclined at an angle to each other. The idea is somewhat similar to that of the original engines of the Great Britain, designed by Brunel, with the exception that the latter were fixed.

Boardman's Boiler—The inventor proposes to supplant the common locomotive boiler by his plan, but it seems to us that the vertical position of the tubes is a great drawback. There is doubtless an enormous sacrifice of fuel in locomotive boilers, but railway companies are willing to suffer that loss to attain a high rate of speed. If the tubes according to the model, are to be fixed vertically, we doubt their superiority for a rapid generation of steam. For stationary purposes, where economy of fuel is an important object, this may probably be a desideratum.

E. Gould, of Newark, N. J., D. & M. Saunders, of Hopkinton, R. I., and others, exhibit some excellent machinists' tools.

Baldwin & Cunningham, of Nashua, N. H., exhibit an excellent machine for boring locomotive cylinders without the necessity of removing the cylinder from its place. All locomotive managers will be aware of the utility of this invention.

Ingersoll exhibits a useful Drill Brace, in the mode of working somewhat similar to the ratchet brace, but with the advantage of moving the drill during the back stroke.

Steam Paddle—By Carpenter, of Flushing, L. I.—The float blades are here made to feather by rods which slide upon an elliptical frame. The main objection to all these plans of adjustable paddles, is the liability to get out of repair, otherwise they are far superior to the common paddle.

Rotary Pendulum Governor—By J. Tremper, of Buffalo, N. Y.—We noticed this governor revolving at a tremendous rate, but the fans which the maker has attached to the cylinder, make it rather embarrassing to discern. It is a modification of the ordinary governor, but must evidently be much cheaper;

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how far it is more efficacious we are unable to say. The many joints which are necessary to the latter, are here superseded by a cord or catgut.

Judson's Governor Valve—This valve is very similar to a disc valve or to the regulator which is used in many locomotives.

MISCELLANEOUS.

Under this head we have comprised a variety of inventions that are not sufficiently numerous, or of sufficient importance, to be classified alone.

Lightning Conductors—By Otis & Streeter.—This invention consists of metal rods running down the sides of the building from which they are insulated by glass stays. Along the ridge of the roof is a horizontal rod, which connects the longitudinal conductors, and at intervals project pointed rods.

Mortising Machine—By O. Judson, of Steuben Co., N. Y.—This is very good for what it is intended, viz., for piercing holes in hubs.

Card Printing Press—By G. P. Gordon, of New York.—This was the only press we noticed at the Fair, at which we are rather surprized, as several patents have lately been taken out. It bids fair to become a formidable rival to the Yankee Card Press now generally used. Mr. Gordon has substituted the revolving type cylinder for the common method,—the paper is in an endless roll, and is fed down from overhead on to a flat bed, where it receives the impression from the cylinder as it revolves, and thence descending, is cut into cards as fast as printed.

Paper Cutting Machine—By S. Perry.—The top cutter is fixed, and the under one revolves—as the latter approaches the paper it closes a catch above, which grips the paper so as to hold it square whilst being cut. As the lower cutter revolves, the catch or nipper is loosened, and the paper is fed down as before.

Daguerreotype Buffer—By Duryea, of Williamsburgh, L. I.—Here we have a new species of buffer, different from any other in use, the inventor using a straight motion instead of a circular one. A bed, covered with buff leather, is made to work to and fro by the usual foot motion. The plates are held up to the under-side of the buffer by means of a lever which the operator holds to regulate the pressure.

Street and Rail Truck Sweeper—By A. S. Watson, of Staten Island.—More likely to be used for the former purpose than for the latter,—consisting of an apparatus fixed beneath the car. Two large geared wheels are worked by a piston; around their edge are fixed vertical brooms, which are kept downwards by spiral springs. The pinion is worked by a species of tread-wheel mounted on the car, but we see no reason for it, as the motion of the car would be quite sufficient from which to derive power.

Stone Picking Machine—By J. T. Foster, of Jersey City.—This invention consists of a series of revolving prongs, which catch up the stones and jerk them into a spout, from which they afterwards run into the car. It is adapted either for roads or agricultural purposes.

Coupling for Shafting—By Vanzile, of New York.—The circumference of the fixed pulley is divided into segments, which are capable of expanding when acted upon by a contrivance that is moved to and fro by a long lever. Supposing the loose pulley in its place in the fixed one, by pushing the lever to the right the segments are forced out and grasp the loose pulley, which carries the shafting around with it. The weight of the lever maintains the tension of the segments.

There are a few standing, embossing and other varieties of presses, in which we noticed nothing particularly new, with the exception of a standing press, (marked in the catalogue No. 1839), in which the maker has placed the screw on a horizontal instead of the usual vertical position, and has also employed an elbow-joint.

There are on exhibition several of Dick's Anti-friction Presses, but most of our readers are acquainted with their excellence, having been fully described and illustrated in the Scientific American.

Cotton Spinning Machine—By Brundred, of Oldham, near Paterson, N. J. (See page 361, Vol. 7.)—This is decidedly the best machine of the kind in use. It is of the throstle description, but no throstle will produce the fine work of which a mule is capable. However, those who desire to produce the description of thread that the throstle is capable of producing, may use this machine with advantage.

Among the minor inventions are a Balance Window Sash and several Bread, Meat, and Fruit Cutters; of these latter it may be observed, that however excellent for particular purposes, they will never supersede the common knife, and the living lever by which it is worked.

Bridges—Of this class we have three different inventions—two trussed bridges and a plan of a submerged bridge for railroad purposes. The peculiarity of the first is its lightness, too much so, in our opinion, to be compatible with bearing much weight; of the second is its strength, in proof of which the inventor, Gralley, of Brooklyn, has loaded the model, on the top, with 2,000 lbs. weight of iron, presuming, we suppose, that the actual bridge will support a proportional burthen; but theory, in such cases, is often at variance with practice. The third, as mentioned above, is a plan of a submerged bridge for railroad purposes. The bridge, when not required for the passage of a train, is sunk at the bottom of the river, and pulled up when a train requires to pass. The idea is good, but the question is as to its general practicability; we foresee many obstacles where the river is wide or deep, in the facility of its construction and management. Otherwise, it would be a great desideratum where stationary bridges are not allowed to be carried over rivers.

AGRICULTURAL IMPLEMENTS.

In this department there is on exhibition the ordinary run of agricultural machinery, but we did not observe anything very novel in their arrangement. There are three or four different kinds of reaping and mowing machines, but there is nothing very interesting about them. The same remark is applicable to the other kinds of implements, which do not vary particularly one from the other in the arrangment of their machinery. Among the articles stationed in this part of the exhibition, we noticed a new faucet for water and other liquids, the invention of E. Stebbins, of Chicopee, Mass. It substitutes a flat valve, which is raised by a screw, for the ordinary tap; a leather seating is used for the valve, and likewise leather packing for the screw. Abraham's patent, in England, is very similar, but probably more expensive, as he employs a mitre valve.

Four Grain Cradle—By S. Wilkinson, of Middleton, Orange Co., N. Y.—This instrument differs somewhat from the ordinary cradles, in the number and arrangement of its adjusting screws, as also in the shape of the handle, which is curved differently from what is usual. From the specimen exhibited, we should conclude it to be a superior article.

FINE ARTS.

In this department we noticed several beautiful specimens of workmanship and taste,—a collection of medallions, busts, &c., in what is called, by the artist, Sitler—Parian composition resembling alabaster; bronze figures, &c., Lucet;—with a variety of objects of luxury and use, which it would be impossible to particularize. Furniture of every description—chairs, bedsteads of iron and wood, silver ware, clock stands, telescopes, &c. Fire-proof safes, so ornamented that they appeared more fit for a lady's boudoir than a merchant's counting-house. Specimens of inlaying in wood, by Volkert, Elm street, N. Y.; Electrotype specimens by John Evans, Jr.; pictures, prints, needle-work,—and a host of miscellaneous articles.

Daguerreotypes—This department of the Fair is generally very attractive to the idlers, who love to while away the time by studying the various specimens of the "human face divine." We have, as usual, a goodly collection. Gurney exhibits below, in the body of the building, some choice specimens of the art,—there is a softness about his pictures which we meet with nowhere else; whether it arises from a more judicious light, or better prepared plates, we know not, but such is the case. The majority of the Daguerreotypists, however, exhibit in the upper gallery, and here we pass, in rotation, Holmes, Meade, Root, &c., &c. Meade's collection has an imposing appearance from the number of extra mammoth-sized pictures exhibited, they are mostly superior specimens, but should not be ticketed, as some are, with what may be called certificates of character—"good wine needs no bush." We noticed one or two ticketed in this manner, "A Rembrandt," but why or wherefore we cannot tell, as to being copies of Rembrandt's peculiar style, we decidely object to the assumption. Root exhibits some specimens of crayon daguerreotypes which do him infinite credit; they are a pleasing diversity from the ordinary pictures, and depict, with great effect, the more striking traits of the physiognomy. Insley also exhibits some unique specimens of the art, which, as models of a peculiar style, are highly commendable; the method appears to us particularly applicable for copying statues, &c., of which the specimens exhibited are copies. As a matter of course, there are several other exhibitors of this class, but the above-mentioned struck us more particularly with their excellence.

[To be Continued]

For the Scientific American

On Rainbow Colors.

It is found that if we diminish the thickness of transparent bodies to a certain degree, instead of transmitting and reflecting white light, it is in both cases colored; this is seen in soap-bubbles, thin films of glass, mica, &c. In all these cases the colors are due to the interference of the luminous rays, and the different colors depend upon this interference—the light from the under-surface of the film interfering with that reflected from the upper. In this manner De la Rue applied iridial colors to paper, plaster of Paris, wood, &c., by dropping a colorless varnish on water, and lifting up the substance under the colors thus produced, giving to objects the appearance of the mother-of-pearl, the iridescent hue of the plumage of birds, the shields of beetles, and colors of a like nature. The same colors are frequently seen when oil and other substances, not soluble in water, are thrown on that liquid; these colors are also produced by the reflection of light from delicately grooved surfaces, as is seen in the mother-of-pearl, and whalebone which has been cut transversely. By cutting grooves in polished steel or other metallic surface, at the distance of from the 2,000th to the 10,000th of an inch apart, the same colors are produced, and I have frequently succeeded in producing them by corrugating thin films of gum arabic, tannin, isinglass, &c., by rapidly drying a solution of these on a smooth metallic surface. In all cases where the colors are produced by grooved surfaces they are transferable to wax and other plastic substances.

Rainbow colors are frequently produced in coating the silver tablets for taking daguerreotype pictures, by the formation of a thin film of the iodide of silver, but when thus taken they are not permanent, as they are blackened by the well known action of the sun's rays on the iodide of that metal. This objection can be obviated by using a polished copper plate, instead of one of silver, the iodide of copper not being affected by light. They can also be permanently witnessed upon a silver plate by holding it over sulphur which is being sublimed on the fumes of burning sulphur, by which a thin coating of the sulphuret and sulphite of silver are formed, neither of which are affected by the chemical rays of light. When burning silver is used, under a silver plate, the colors are of a bluish cast and of great beauty.

Copper, when well polished, and held over the fumes of sulphur or bromine, will also receive an iridescent appearance, and objects composed of wood, plaster of Paris, cloth, &c., may all be made to receive these colors by first coating them with silver or copper, by means of galvanism, and exposing them to the vapors of sulphur, iodine, bromine, and the fumes of burning sulphur.

The colors produced by evaporating solutions of the gums on smooth metallic surfaces are effaced by varnishing them, the grooves being filled up, but this is not the case when iodine or sulphur is used, their intensity being heightened by the application of varnish. The latter, of course, are not transferable to sealing-wax from not being formed of grooved surfaces. CHAS. W. WRIGHT, M. D.

Cincinnati, October, 1852.

A New Kind of Brick.

The following we have seen in quite a number of exchanges:—

"The article referred to is made of coke and other materials, and with such success and economy, that they can be afforded for about one-third the price which is now paid for the common bricks made of clay. The manufacture, according to the specification, is effected by means of cast-iron moulds, the interior of which are the exact dimensions of the common brick; in this mould a certain quantity of duff or waste coal, powdered coke, charcoal, or cinders, is placed, and being carbonized, the amalgamated material swells to the exact form required.

When taken from the mould it undergoes a finishing process, in which varnish is applied to the end or side having, while wet, a coating of powdered glass, with an admixture of a mineral coloring matter sifted over it. The brick is then vitrified, when a beautiful glaze of any required color is produced, and the article is ready for use. During the manufacturing process, the fumes are passed through water. The finishing process is only required for particular purposes, as in many instances the coke brick is equally available without it. The material is rendered fireproof by an application of the muriate of alumina, and is impervious to atmospheric influences by the nature of its formation. When articles of coke fabric are required of extraordinary density, a variation in the filling material, and also an extraordinary amount of compression, are necessary; and then there is hardly any limit to the degree of solidity which may be obtained. It is further stated that there is no description of article used in the erection or ornamentation of buildings but may be produced of the material; thus columns of interior and exterior use, cornices, capitals of plain or ornamental design can be manufactured and supplied in a finished state."

[Now, no one acquainted with the price of coke and clay can for a moment doubt, if he reflects, that this new material must be far more expensive to manufacture than brick. Common bricks can be vitrified in the same manner, and as clay contains a great quantity of alumina, bricks do not require to be rendered fire-proof, (for this they are already) by being dipped into a solution of chloride of alumina. Instead of such bricks being made for one-third less than common bricks, we believe that they could not be made for double the price, and in every sense they must be inferior in quality. Ornamental brick can be made of clay,—they are now made.

Gold Deposits in Canada.

The provincial geologist of Canada, in his report for the year 1851'52, gives an account of gold washings on the river Du Loup, at its junction with the Chaudiere, in which he states that during the present season 1,900 pennyweights of gold have been obtained by fifteen men employed by the company engaged in working the deposit. Much time and money were lost in consequence of their dam being carried away, but on the whole the labor has been remunerative. The other minerals found in connection with the gold and iron sand, a small quantity of platinum, and irrodium with an indication of mercury.

Several prospectors, both American and Canadian, have traversed the country around, and have been successful also in finding the precious metal in other localities, but had not succeeded in making its collection profitable. The geologist concludes, from the evidence collected, that the deposits are not generally sufficiently rich to render their working remunerative to unskilled labor; and that agriculturists and others engaged in the ordinary occupations of the country, would only lose their time and labor by turning gold-hunters.

Preservation of Timber.

Mr. J. C. Symms, of the U. S. Arsenal, of West Troy, N. Y., is now engaged in making experiments with different solutions on white oak timber for the United States, an account of which experiments he will present in a series of articles to the readers of the Scientific American.

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NEW INVENTIONS.

Machine for Sweeping Streets.]

Joseph Sawyer, of the city of Boston, Mass., has taken measures to secure a patent for an improved machine for sweeping streets. Three brush wheels are attached to a carriage—two being placed at the front and one at the back part. The front brush wheels are placed horizontally under the carriage, one at each side, and as they rotate, they sweep the dirt into the centre underneath the machine, and at intervals they are made to rise and step, as it were, over the heap of dirt gathered to the centre. The brush wheel on the back of the machine is vertical, and is placed on a line to the central heaps of dirt, and sweeps them up as the machine moves along up a short inclined shute into a proper receptacle. The work of sweeping the dirt into heaps, and up into the receptacle, is carried on until there is a full load in the receptacle. It would be a good thing for this city if some more effectual means for keeping the streets clean was introduced—New York streets are exceedingly dirty, and yet no city in the world pays more for keeping them clean.

Car and Portable Railroad.

J. F. Jones, of Louisburg, N. C., has taken measures to secure a patent for an improvement in car and portable railroads, the nature of which consists in the peculiar construction of the car, the body of which is suspended or hung upon pivots, so that it is allowed to swing, and thus keep the centre of gravity of the load over the track, which may be made of a very narrow gauge. The pivots by which the body of the car is suspended rest upon a frame, which is supported by small gudgeons at the ends of the axles, said gudgeons passing through eyes, or loops attached to the frame. By this arrangement much friction is avoided. The coupling is so constructed as to allow the body to hang as low as possible, and this allows it to be easily loaded. The rails are formed of detached pieces, connected by pins, which are attached to the sleepers, and so constructed that the detached pieces can be laid either straight or curved.

Piston Packing.

P. Merriam and A. B. Darling, of North Adams, Mass., have taken measures to secure a patent for packing piston heads, stuffing boxes, &c. India rubber or other elastic material is placed between the body of the piston head, and metallic rings. A self-adjusting piston of equal radial pressure is thus produced. By reversing the position of the india rubber, a perfectly tight stuffing box is obtained. The india rubber being used as an intermediate, by properly adjusting it an equal radial pressure will be created, and may be used for pistons, bellows, blowing cylinders, and pumps.

New Bun Cutting Machine.

Simon Ingersoll, of New York city, has taken measures to secure a patent for improvement in machinery for cutting bungs and plugs. The revolving cutter is operated in such a manner that it is fed in slowly by a cam while cutting, but withdraws it very rapidly when it has done its work. The feed motion which moves the slab or plank out of which the bung is to be cut, operates the plank at intervals, between the motions of the cutter spindle, to the proper distance, for every plug to be cut.

Portable Mills.

J. R. Howell, of Boston, and D. D. Lambert, of New Haven, Conn., have taken measures to secure a patent for an improvement in portable mills, which consists in the employment of an oil fountain bush, so arranged as to hold and retain a constant supply of oil around the collar of the spindle and boxes, the boxes being entirely submerged in the oil. The upper stone is hung upon the spindle in such a manner that the ordinary bail is dispensed with, and a perfect universal joint obtained. The runner stone is so attached to the spindle as to move up and down with it.

New Corn Planter.

Job Brown, of Peoria County, Ill., has taken measures to secure a patent for a new planter, which has new and peculiar shares, each being bevelled at the back, and having a groove in it. The hoppers are placed above the recesses, and the seed drops down into them, and then falls into the furrows made by the shares. The seed is distributed from the hoppers, by slides, in the common manner.

A New Styptic.

A physician of Rome has recently succeeded in discovering a liquid possessing so extraordinary a power of coagulating blood, that if to a large basin containing this fluid, one drop of the styptic be added, complete solidification ensues, so that the basin may be inverted without causing any blood to be lost. The following is its preparation:—Take eight ounces of gum benzoin, one pound of alum, and ten pints of water. Boil all together, for the space of eight hours, in an earthenware glazed vessel, frequently stirring the mass, and adding water sufficient to make up the original quantity of that lost by the ebullition, taking care, however, to add the water so gradually that boiling may not be suspended. The liquid portion of the compound is now to be strained off, and preserved in well-corked bottles.—[Albany Register.

[The alum, itself, we apprehend, is the sole styptic; it is now used for this purpose by our dentists.

SWITZER'S SCREWDRIVER.---Figure 1.

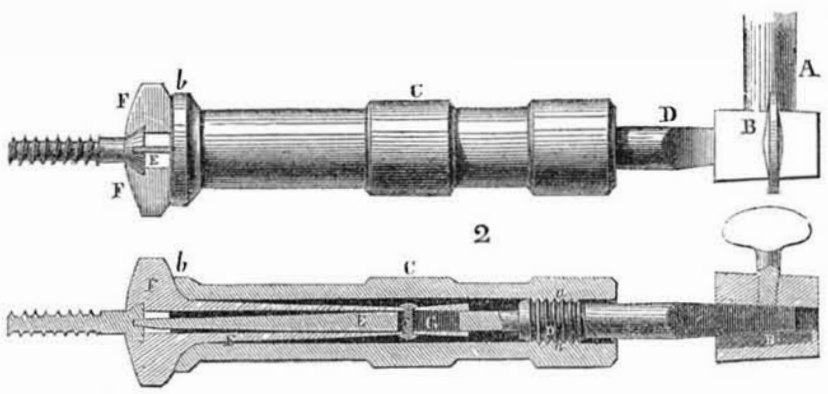


Figure 1 is an outside view, and figure 2 is a longitudinal section of the Jaw Screw Driver, invented by Jacob W. Switzer, of Basil, Fairfield Co., Ohio, who has taken measures to secure a patent therefor. This screw driver is operated like the stock-brace, only it has spring jaws for holding the head of the screw-nail, while the driver is inserted into the groove or notch in the head of the nail. The handle of the stock is broken off.

A is part of the handle, and B is the stock; they are made in the usual manner; D is the shank of the driver, E. F F are spring jaws for embracing the head of the screw-nail. C is a barrel or tube surrounding the shank of the driver, and legs of the spring jaws, F F. The spring jaws are fastened to the shank of the driver by a pin, c, which passes through a slot, G, in said shank; this slot allows the driver to be thrust further out beyond the face of the jaws, or to be drawn within them. This operation is performed by having a right-handed thread cut on the shank, D, and a left-handed thread, *a*, cut on the inside of the barrel, C, as shown in fig. 2.

To drive in a screw-nail, the jaws are made to embrace the head of the nail, and are compressed on to them by turning the barrel, C, to the right, the driver then being, as represented, inserted into the crease of the nail head. By turning the stock, the barrel, C, and driver, revolving to the right, the screw is driven in rapidly and with great ease; no hole is required to be made with a gimblet, previous to driving in the screw.

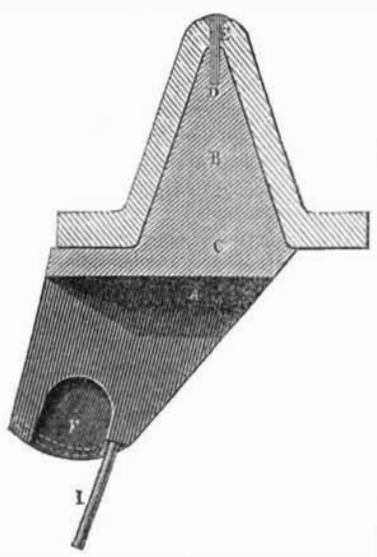
To release the jaws from the head of the screw, all that is necessary to be done is simply to grasp the barrel, C, firmly with the left hand and keep turning in the same direction. The slot, G, allows the driver to be forced beyond the jaws, when the barrel is grasped, and this relieves them.

To draw a screw from a counter-sink, the driver, E, is worked to project beyond the jaws (which is done by holding on to the barrel with the left hand and turning with the right), and then it is inserted into the crease of the head of the screw, and the stock is turned to the left, the barrel turning round with the driver. After the head is drawn out a short distance, the barrel, C, is held firm with the left hand, and the jaws are then left free, and allowed to grasp the head of the nail; when this is done, the barrel, C, is turned round with the left hand, to bring it down firm on the jaws, after which the driver, jaws, and barrel are turned to the left, and the screw is drawn out rapidly.

More information may be obtained by letter addressed to the inventor.

Hanley's Castors for the Legs of Pianofortes, Tables, &c.

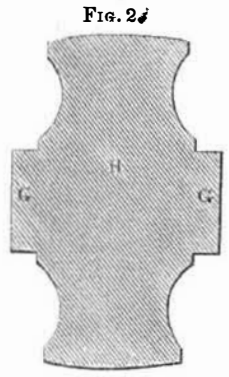
FIG. 1



The annexed figures represent an improvement in Castors, invented by J. Hanley, No. 10 North William street, New York City.

Figure 1 represents a section of the frame of the castor, with a section of the cap upon it. Fig. 2 is a section of the wheel or roller, showing it and the journals cast in one piece. The same letters refer to like parts. The frame, A, of the castor and its axis, B, is made in one piece. The axis, B, is of a conical shape and has a broad base, C; the apex terminates with a pin, D, which is of wrought-iron and inserted in the mould of the casting, and is thus moulded along with the axis. The end of this pin passes through the centre of the cap at E, and is rivetted on the outside so as to hold the frame and the cap together, but allows the frame to revolve in the cap. The frame, A, is made with two channels, F (one only shown) cast in it, to answer for bearings

FIG. 2.



of G G, to the wheel or roller, H, to work in. The wheel or roller is secured in its place by the pins, I I, of wrought-iron, which are moulded in the casting; these pins are bent over the journals of the wheel, as shown by the dotted lines, and it is thus secured in its place. The wheel or roller, H, is cast with journals in one piece. The common castors have no conical upper axis, but a straight one secured in the cap by a transverse pin; the axes or journals of the common castor roller are a separate spindle, not cast along with the wheel. The evident improvements of this castor for furniture will be plain to every cabinet or furniture maker.

Measures have been taken to secure a patent. More information may be obtained by letter addressed to Mr. Hanley.

Printing Types.

We have a deep respect for the memory of John Guttenberg, the inventor of movable types. It was not the *printing press* which gave the grand impetus to modern civilization and developed the age of discovery. No, it was the movable type of the clear-headed German of Mentz. The press employed for a long time to take impressions, after the invention of movable type, (printing blocks were known and used before that), was a screw-press, but no sooner was the improvement made in the type, than a reformation in every department of knowledge commenced. All hail then, we say, to the memory of Guttenberg.

If old German John was now to arise from his grave and see the improvements which have been made in the manufacture of type since his day, he would be as greatly surprised, if not more so, than at the improvement which he himself discovered, as being superior to that of the old pen-made books. Of this we are fully convinced by examining a specimen book of printing type manufactured by H. H. Green, type founder, our next door neighbor, (128 Fulton street, New York). This work contains the most beautiful samples of different kinds of type that we have ever seen, the manufacturer of such type may well feel proud of what he has to offer to the public as specimens for all kinds of printing—plain and ornamental.

City Railroads.

The railroads which have been constructed in New York City, have not, as yet relieved the principal street—Broadway. It is almost impossible for pedestrians to cross Broadway below the Park during any time of the day between 7 A. M. and 8 P. M. Females are in danger of losing their lives while crossing; they have to run for life or death. It has been calculated that 500 omnibuses pass a single point in Broadway every hour, or more than 8 every minute. It is easy to see from this that it is almost impossible for persons to cross from one side of the street to the other. To relieve the street, it is proposed to build a railroad with a triple track, each 4 feet wide, and to employ 120 cars, so as to despatch one every minute each way, or 60 an hour; and it is said that these cars will carry more passengers than all the omnibuses. It is proposed to lay down a grooved rail that will not interfere with carts and carriages. A single horse has drawn thirty tons at the rate of 6 3-4 miles per hour on the Ohio and Baltimore railroad, and it is contended that the great amount of load which a horse can draw on a railroad, in comparison with what it can draw over our paved streets, should at once induce every reasonable person to give his preference to the railroad for passengers, in preference to the omnibus.

On the other hand, the owners of property assert that a railroad will injure the character of the street for business, and destroy it as a public thoroughfare for promenade and pleasure. Science, progress, and reason, appear to be on the side of those who advocate the railroad, but the only arguments which can safely be applied, are those of facts. If a railroad is more dangerous, does not look well to the eye (this is for the taste of the promenaders), and is more inconvenient for private carriages, so as to prevent them passing through Broadway for business or pleasure; in short, if the advantages of the railroad are less than the present omnibus system, it would be folly to build one; here lies the gist of the whole question. Every person can see that some reform is required to remove the obstruction to the free crossing of the street; what shall that reform be? is the question; the only rational one proposed is the railroad.

By the latest news from Europe we learn that the American ship Mobile was wrecked on the coast of Ireland, and all but three of those on board perished.

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Scientific American

NEW-YORK, OCTOBER 23, 1852.

New York City.

From manifest indications we believe that the city of New York is destined to be the largest in the world. At present it contains more than one-sixth (520,000) as many inhabitants as there were in our middle country seventy years ago, and our whole country contains seven times more than there were in it at the same period. The City of New York has grown with the growth and strengthened with the strength of our united Commonwealths, and with the same mighty tramp of progressive population, which is now heard sounding from the Atlantic to the Pacific shores, so, from the ten thousand sources of our population, will there come those who will pitch their tents within our walls and take up their abode in modern Tyre. In the natural course of events, the City of New York will contain a population of 2,000,000 of inhabitants in sixty years from the present date. Nothing can prevent this but some overpowering calamity, which no one can foresee at present, and which no one anticipates. If such will be the mighty tide of population flowing through our streets in 1910, what will the City of New York be in A. D. 2,000? This is a question which no one can answer. Strictly speaking, New York is a commercial city, a mart of the sea—a port for tall ships and a caravansera for the merchants and merchandise of the world. On one side it is bounded by a narrow arm of the sea, and on the other by a broad and noble river; it is secure from all winds, and the most gigantic leviathans of the deep can ride safely and lightly close up to our wharfs and our warehouses. Every year it is becoming more and more like a whirlpool in drawing from afar those who want to sell and those who want to buy. Its centralizing influence is immense, and it no more can be checked than can the tides of the ocean. Here men come with what is new, and here men come to see what is new. "As iron sharpeneth iron, so doth the face of man his fellow;" and the natural result of men often meeting in masses together, is both to spread and elicit knowledge. Of this we have been more sensibly impressed during the past three weeks, than during any other period within our recollection. The streets of New York have been daily trod by forty thousand strangers in search of business and pleasure. Nowhere else have we had, or could we daily have, such opportunities of obtaining information from so many different sources, and of imparting it to so many different "lookers on in Venice." The Fair of the American Institute attracts many thousands to visit this city annually, and next year the World's Fair will attract far more than have ever visited New York before. The cities of the old world possess more interest to the traveller, because they are nearly all historical, and the association of places with events which have become famous in story, kindles up the feelings and excites the imagination; New York cannot boast of towers, castles, venerable cathedrals, &c.; neither can it boast of towering monuments, gorgeous palaces, splendid works of art, museums of renown, and galleries of paintings; no, she can boast of none of these; but every year adds something new and more imposing, and as certainly as time wings its flight, so certainly does New York grow on, and [illegible] in grandeur and the acquisition of buildings and institutions, which will yet become renowned as those of London or Paris.

Important Patent Cases.

There have been two very important patent cases recently tried before two separate U. S. District Courts; we allude to the famous India Rubber Case, Goodyear versus Day, and the Revolving Fire-Arms case of Colt versus Allen. These trials have impressed us forcibly with the conviction that our U. S. Courts of Chancery are founded upon a wretched system. They are termed "Courts of Equity," —the better name for them would be "Courts for the benefit of Lawyers." The case of Goodyear versus Day, for the infringement of a patent for the manufacture of vulcanized india rubber goods, has been before our U. S. Courts for some years, and it has only been brought to a conclusion within a few weeks. And yet, although an injunction has been granted against H. H. Day, we cannot strictly call it "a conclusion of the whole matter," for the defendant has published a card, stating that, under the advice of his counsel, he will appeal from the decision of the District Judges to the Supreme Court at Washington. This case may be banded from court to court, for some years to come, before it is finally concluded. The Supreme Court at Washington may reverse the decision of the District Court, and then, after that, a long trial by Jury will have to put the cap on the whole of the circumlocutions of the courts and the speeches of counsel. The first thing that is done by a patentee to get satisfaction for the infringement of a patent, is to apply to a U. S. Court for an injunction to restrain such and such a person or persons from infringing his patent. Notice is given to the alleged infringer of this application, and he at once employs counsel, and if the patent is an important one, "lawyers of the highest fees" are engaged, and on the plaintiff's side the most forcible arguments are adduced to prove the defendant to be a pirate, while, upon the defendant's side, as plausible logic is poured forth to prove the plaintiff a thief. For this india rubber case the great Daniel Webster was employed by Goodyear, and the renowned Rufus Choate by Day; other assistant and eminent counsel were also employed by both parties, and the speeches which they made to enlighten the Judges, occupied a number of days. After they were all made, these same judges took a most patient view of the whole subject, and came to the conclusion that they would make a short day's work of it, and hence they at once shut up Day from working any longer on his own account.

We do not know, but it is our opinion, that this case must have cost each of the parties $20,000, at least, for lawyers' fees alone. Now, is this all that our republican simplicity has wrought us, in obtaining justice for alleged violation of rights? Is it not possible to erect a system of United States Jurisprudence of a more economical, conclusive, and satisfactory character than this? We think it is. While we say this much, we admit that it is far easier to pull down than build up, and we do not like to disturb existing systems for new ones, until good evidence is given that the evils will be remedied and beneficial results follow. It is our humble opinion that if our District Judges, in reference to patents, would at once, when any injunction is prayed for, order a trial by Jury, without hearing any long arguments in equity at all, the ends of justice would be more promptly and satisfactorily obtained than by holding Courts of Equity, for the benefit of enlightening the Judges as to their duty in the case. We will not, at present, enter into a further discussion of this subject, although we have much upon our mind to say; at some other time we will return to it; and merely say, in conclusion, that duty compels us to keep it before the people.

Poisonous Chloroform—Tests for its Purity.

On pages 3 and 16, of this volume of the Scientific American, we published the experiments of Dr. Jackson, of Boston, with chloroform and fusel oil, and stated, as we believed to be a fact, that he had made a most important discovery in finding out the cause of many deaths which had occurred by the use of chloroform. The chloroform which had been used was made out of whiskey, which contains this oil, instead of being made out of pure alcohol. We now have to state that this is not a new discovery. On pages 280 and 281, of "Chambers' Edinburgh Journal," for 1850, there is a paper by Professor Gregory on this very subject, which speaks of the danger arising from making chloroform of the pyroxylic spirit of commerce. He states that this spirit of commerce contains impurities of oils, and the chloroform made of it "is extremely dangerous, because the oils mentioned are very deleterious when inspired, causing migraine, sickness, and vomiting. These effects may be produced by chloroform containing but a small portion of these oils, the vapor of which comes in contact with the internal surface of the lungs. A larger proportion of oils, such as is sometimes found, may produce very serious results, hence the necessity of perfect purification." These quoted sentences embrace the very discovery asserted to have been made by Dr. Jackson.

It is essential that every medical man should be enabled to ascertain, readily, whether any given specimen of chloroform be pure. Dr. Gregory presents some very excellent tests for detecting impure and proving pure chloroform, which are so plain that no surgeon nor dentist in our country can be excused, after this, for using any that is impure. One is, pure chloroform has the density of 1·500, but as this test is troublesome, depending on temperature and delicate instruments, two other modes are given. The next is to shake the chloroform in a well stoppered (not corked) bottle, along with one-half of its bulk of the oil of vitriol (colorless) of the density of 1·840. If any trace of oils is present, the acid becomes more or less yellow, and when allowed to stand, a darker line appears at the junction of the liquids. When the yellow color appears, after being shaken and standing still for a short time, the chloroform is poured off into another vial, where it is shaken anew, with another and a smaller portion of vitriol. If, after a time, this appears colorless, the chloroform may be considered pure, and it only remains to remove the acid from the chloroform. This is easily done by pouring the chloroform into a third dry vial, and shaking it with a little peroxide of manganese till its smell is quite free from that of sulphurous acid, which is very soon the case; its specific gravity is then 1·500, and it is perfectly pure. Another test, but a very delicate one, is to allow a little chloroform to evaporate from the palm of the hand; when pure it leaves no smell, but if there be a trace of oils they, being less volatile, remain and present a disagreeable odor. It is very difficult to get chloroform so pure that it will leave no odor when thus tested; but no practitioner should use chloroform if it leaves a strong and distinct smell of noxious oils, or if it colors the acid. These tests are easy, and chemists cannot be offended if surgeons refuse to use their impure chloroform, when it is so easy of purification and so dangerous to use. Pure chloroform produces none of the persistent sensations which are caused by the impure. Dr. Gregory has seen a specimen labelled "pure chloroform," which scarcely contained a trace of that liquid, and Dr. Simpson, the discoverer of chloroform, once received a bottle of apparently pure stuff from a maker of good character, and there was not one of his patients but suffered from its use, until he suspected the cause, tried it and found it to be impure. In "Chambers Journal," for 1851, page 57, it is stated that it has been administered in Edinburgh 80,000 times without a single accident. We have now a true clue to the cause of death produced, in more than one instance in our country, on persons who had previously inhaled chloroform without the least evil effect.

"The Niagara Mail," vs. "Scientific American."

"The Scientific forgets to relate how, that Hobbs' own lock was picked in two hours, by a London locksmith; and that the reaper was invented in Scotland, twenty years ago, and re-invented by Mr. McCormick, a Scotchman in the United States, who introduced it to the World's Fair, and lastly, that the 'glorious Yacht America,' has been beaten twice in England. The Scientific American, not only denies the least modicum of praise to foreign ingenuity, but not satisfied with that, there is never an invention or improvement announced in Britain but that journal makes it its particular business to decry either it or its author. The Scientific American is no true lover of science, else such illiberality and vulgar depreciation of talent out of the United States, would not be permitted to fill its columns."—The Niagara Mail.

[There is not a sentence in the above which we cannot, with reason, contradict as an untruth. Hobbs' lock has not been picked in England; and if the reaper was invented in Scotland 20 years ago, an assertion which we do not deny, Mr. McCormick, although bearing a Scotch name, is a native of Virginia; and if he re-invented the reaper, it was original with him, and does not militate against the remark of ours, that called forth the above, viz., "McCormick's reaper gained a triumph at the World's Fair." If Patrick Bell invented a good reaper 20 years ago, Englishmen and Scotchmen ought to take shame to themselves for allowing it to cut silently a few acres only, on the Carse of Gowrie every year. Americans ought to be thanked for bringing this useful invention into notice at the World's Fair. The "Yacht America" has not yet been beaten. No candid Englishman will contradict this assertion; there is a great difference between losing a race and being beaten.

The Scientific American, instead of denying praise to foreign inventors and inventions, has always been forward to praise them when they deserved it. When speaking of American triumphs, we never employ opprobrious epithets against others. We speak as strongly against poor or humbugging home inventions as we do against foreign ones. We endeavor to be impartial and generous, and it is very singular that while our foreign scientific exchanges have given us credit for this course of conduct, a provincial journal should see fit to speak in different terms. No paper in our country, we believe, endeavors to be so impartial when speaking of foreign inventions and inventors. Our rule is truth, and our motto is, "honor to whom honor is due." If the Mail had been as candid as it is captious, it would not have used the language we have quoted.

To All Whom it may Concern.

"GATESVILLE, Oct. 4th.

MESSRS. MUNN & Co.—Please continue the Scientific American to my former address. Enclosed find $2 in payment. Yours,

SAML. IVES."

We publish the above letter for the purpose of directing attention to one of the most serious annoyances experienced by newspaper publishers, viz., the want of proper directions for mailing papers. Sam'l Ives has no doubt been a subscriber, but not at Gatesville, and as no such place appears on any of our books, therefore the conclusion is inevitable that Mr. Ives has never received his paper at that office,—indeed we never before heard of such a place, and could never find it by the aid of Mr. Ives' letter. Gatesville may be in Maine, North Carolina, Missouri, Texas, or any other of the thirty-one States, and, for aught we know to the contrary, a ville bearing this name may be found in every State in the Union. We spent an hour in looking for Mr. Ives' name in hopes of discovering his whereabouts, and, after finding three of the same name, we are obliged to wait another letter from him, in which he may slightly hint at our rascality, because we take his money without sending the paper in return.

We have many times been so confronted by correspondents, where the fault was entirely their own. Whenever any person sends for a newspaper, great care should be taken to specify the address to which the paper is to be mailed. Write your names, with town, county, and State, in a clear legible hand. If you cannot write plainly, print the address in Roman letters, with a pen; this will always give satisfaction, and insure correctness in mailing. Sometimes we can decypher the address from the postmark, but this is not always to be regarded because we have had many letters mailed from offices at a distance from the writer's residence. We remember one from a gentleman who, we have since learned, resided in South Carolina. This letter was dated at one place, mailed at another, and contained a postscript requesting his paper to be sent to another place, and in neither instance was the State indicated. This, we repeat, is a great annoyance, not only to the publisher but also to the correspondent.

Magnetic Balloon Ascent.

Applications have, it is said, been made to the proprietors of the different places of entertainment in London, from whence balloon ascents take place, by an individual who wishes to make an ascent suspended 30 feet below the car, by magnetic attraction. The method by which he proposes to accomplish the feat is this: he possesses a magnet, the attractive power of which will sustain a weight of 150 lbs.; this is to be hung by a line 30 feet below the car; round his body is fixed an iron zone, which on being brought near the magnet firmly attaches itself thereto.

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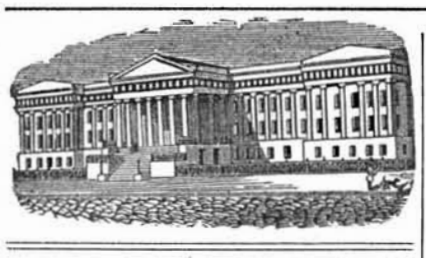

Reported Officially for the Scientific American

LIST OF PATENT CLAIMS

Issued from the United States Patent Office.

FOR THE WEEK ENDING OCTOBER 12, 1852.

APPARATUS FOR HEATING FEED WATER OF STEAM BOILERS—By M. W. Baldwin, of Philadelphia, Pa., and David Clark, of Schuylkill Haven, Pa.: We claim the arrangement of a heater for the feed water of steam boilers, with respect to the chimney, smoke box, and the blast pipes of the escape steam, substantially as described, so that the heated smoke and gases from the smoke-box, and the exhaust steam from the cylinder, shall pass separately through the heater, in distinct tubes or channels, in such manner that they cannot mix, until both have passed the heater, as set forth.

MILL STONES—By Thos. Barnett, of Beverly, England. Patented in England Jan. 8, 1852: I am aware that holes or apertures in upper and under millstones, have been sometime in use, and I do not claim simply the making of holes or apertures, in mill stones, as my invention.

I claim the making, in under mill stones, of holes or apertures, covered with wire gauze cloth, perforated metal plates, or any other substance that will allow part of the meal to pass through, after it is sufficiently ground, in combination with holes or apertures, in upper mill stones, containing sweepers, brushes, or rubbers, for the purpose of sweeping, rubbing, or brushing the meal over, or through the wire gauze cloth, perforated metal plates, or other substances, without confining myself to the exact detail described.

GANG PLOWS—By Chas. Bishop, of Norwalk, O.: I claim the manner described of constructing the mould boards, and combining them with the blade, in the manner substantially as specified.

SUGAR BOILING APPARATUS—By Wm. H. Clement, of Philadelphia, Pa.: I claim, first, the arrangement and combination of the simmering vessel, with the ball cock and the scumming trough, substantially as described; and I claim this arrangement and combination, whether alone or in further combination with a partial covering of the bottom of the simmering vessel, or the introduction of the steam worm, as described.

Second, the agitator arranged and operating in the manner and for the purpose described.

SCUMMING APPARATUS FOR SUGAR APPARATUS—By Wm. H. Clement, of Philadelphia, Pa. Patented in England July 23, 1846: I claim the application in the manufacture of sugar, of rotating paddles, or leaves, for skimming or taking off the scum and gummous matters from the surface of the liquor.

DISTILLING APPARATUS—By Chas. Delecluze, of New York City: I claim, first, the combination and arrangement of the boiler connected by the pipes with the column, which enables me to work continually, and without interruption by distilling the contents of one boiler, while the other boiler is being filled, and thus distilling the contents of one boiler immediately after the other, as seen in the description of the work.

Second, the combination and arrangement of the worm, situated between the two boilers, and of the pipes which connect the boilers with the worm, enabling me to test and ascertain the nature of the liquid contained in the boiler under operation, and to ascertain when the contents of that boiler are distilled.

ILLUMINATING GAS APPARATUS—By Robt. Foulis, of St. Johns, N. B.: I claim the return pipe, in combination with the retort, as set forth.

Second, I claim, in combination with said pipe, the false bottom and lining, as described.

Third, I claim the arrangement of the decomposing chamber, in combination with the return pipe in the vertical retort.

Fourth, I claim the employment of the series of decomposing trays, under the arrangement in the vertical retort, substantially as described, in combination with the central pipe.

Fifth, I claim refrigerating the gas by air, substantially as described

INDIA RUBBER BAT CLOTH—By Chas. Goodyear, of New Haven, Conn.: I claim passing the bat, or fleece of cotton, flax, silk, or other fibrous substance, together with dissolved or softened caoutchouc, gutta percha, or other vulcanized gums, or the compounds or preparations thereof, between callendering rollers, with an elastic substance interposed between the bat or fleece, and one of the rollers, as described, or between the glazed apron and one of the rollers, as described.

ELECTRO MAGNETIC ENGINES—By J. S. Gustin, of Trenton, N. J.: I claim supporting the principal part of the weight of the armatures of the electro magnets, mounted upon sliding guides, or their equivalents, upon the reciprocating frame, as described, by means of springs, or their equivalents attached to said frame, so as to preserve the balance of weight in the moving parts, as set forth.

SAFETY VALVES—By Alfred Guthrie, of Chicago, Ill.: I claim the construction of the cock in the connecting pipe, by which the resistance to the pressure is taken off, and at which the steam will be allowed to escape.

DOUBLE SEAMING MACHINES—By Walter Hamilton, of Elmira, N. Y.: I claim the mandrel with heads removable at pleasure, in combination with two or more pressure rollers, operating with the same, and with a mallet acting simultaneously with said mandrel and pressure rollers.

I also claim the adjustable steadying rollers, or their equivalents, arranged with reference to the mandrel, and acting substantially in the manner and for the purpose set forth.

HOMINY MILLS—By James Hughes, of Cambridge City, Ind.: I claim the combination of the beating cylinder arranged and constructed as set forth, with the adjustable discharging apertures, by means of which the hulls and eyes are separated from the grain, and the latter is retained within the range of the beaters, for a shorter or longer period, according to the grade or size of hominy or samp, which is desired.

PRESSES FOR BUNDLING FLOCULATED AND OTHER SUBSTANCES—By Danl Kellogg, of Pittsfield, Mich.: I claim the combination of the pressing box made with openings in its sides, with the platen and bed turning on swivels, and formed with channels, so arranged as to admit of the passage of the needles and cord through the pressing box, for the purpose of singly and doubly binding fleeces of wool, or other substances, while under pressure.

GAS REGULATORS—By Walter Kidder, of Lowell, Mass.: I claim producing a uniform pressure of gas in the branch pipe, which supplies the burners by means of the inverted cap, the vibratory lever, and the induction valve, arranged and operating within the chamber, of the branch pipe, substantially as described.

GAS REGULATORS—By Walter Kidder, of Lowell, Mass.: I claim producing a uniform pressure of gas in the branch pipe, which supplies the burners, which may not be varied by the number of burners supplied, nor by the variations of pressure in the main, by means of the counterpoising double inverted cups, the vibratory lever, and the inductor valve so combined and arranged with reference to the main and the branch pipe, that one of the said inverted cups will be acted upon by the gas in the main, and the other by the gas in the branch pipe, as represented.

GAS REGULATORS—By Walter Kidder, of Lowell, Mass.: I claim the producing, at all time, a proper and uniform pressure of gas in the branch pipe, which supplies the burners, which will not be essentially varied by the number of burners supplied, nor by the variations of pressure in the main, by means of the induction valve, the vibratory lever, and the counterpoising inverted cup combined and arranged and operating within the chamber of the main, substantially as described.

HARNESS SADDLE TREES—By Thos. Mardock & Wm. C. Keller, of Cincinnati, Ohio: We claim the crupper loop, having a shank, which, being inserted through the cantle into the pommel, is secured to the latter by the pad-hook, in the manner described.

APPARATUS FOR TRANSPORTING TRAINS ON INCLINED PLANES OF RAILROADS—By Saml. McElfatrick, of Dauphin, Pa.: I claim making the axles of the safety car in two parts, the inner end of each part being provided with an independent journal constructed and operated as described, when this is combined with the auxiliary wheels and auxiliary converging track and hub, substantially in the manner specified.

GRINDING MILLS—By Oldin Nichols, of Lowell, Mass.: I claim the pointed projections on the front edges of the teeth of the cylinder, when used in combination with the teeth in the concave formed with concavities in their front edges, substantially in the manner set forth.

EXPANDING WINDOW SASHES—By Mighill Nutting, of Portland, Me.: I claim the method of varying the pressure of the edges of the expanding sash against the jambs of the window frame, by means of the combination of the adjusting screws and springs with the set screws, or the equivalent thereof, for limiting the extent of the expansion of the sash, as set forth.

PLOW FASTENING DEVICES—By James Robb, of Lewistown, Pa.: I claim holding the share to its place by a tightening wedge, having a lip for lap or bite on the share, in conjunction with the headed or lipped studs for further securing the same.

SEED PLANTERS—By James Robb, of Lewistown, Pa.: I claim, first, causing the point of the drill tooth, when raised out of the ground, to slope backwards by the arrangement of the drag-bar attachment, the friction pulley and the curve of the upper part of the drill tooth, to avoid breaking the teeth, as described.

Second, I claim the combined device of endless screw and curved neck and pinion for producing the result specified.

BURNERS FOR SPIRIT GAS LAMP—By R. W. Sargent, of Philadelphia, Pa.: I claim the combination of the lower chamber or chambers, with the upper chamber, for the purpose specified, viz, the lower chamber or chambers answering the purpose of a heater, volatilize or turn into gas the fluid in the upper chamber, the flame being regulated as described, and the whole arrangement being substantially as set forth, without restricting myself, by this claim, to the precise form of the burner described.

PACKING WATER WHEELS—By Erasmus Smith, of Norwich, N. Y.: I claim the arrangement of the packing between the edges of the chamber or case and the wheels, in such manner that the packing on the lower portion of the chamber is adjustable from the interior, while the packing round the upper portion of the chamber is set up from the outside of the said chamber, substantially as specified, so that the whole of the packing is on the upper side, and none of it under the case, and all capable of being set up or adjusted without the necessity of getting under the case.

GOVERNORS—By John Tremper, of Buffalo, N. Y.: I claim the combination of the winding cords or chains, retarders or discs, hub, and spindle, arranged and operating in the manner set forth.

I also claim operating the governor valve of steam and other engines, by the twisting and untwisting of a flexible cord or chain, or equivalent thereto, attached to revolving retarders, and to the driving pulley placed above it, and detached from the spindle.

I likewise claim constructing the clasp with shoulders upon each part, which fit against corresponding shoulders upon its opposite part, and prevent the opening of the clasp, when they are united by the screw, substantially as set forth.

GLASS BUTTONS—By A. W. Welton, of Cheshire, Ct.: I claim the inserting of figures of uniform or variegated colors upon the inside of glass centered buttons, substantially in the mode described.

RE-ISSUE.

SEEDING APPARATUS OF SEED PLANTERS—By L. Moore, of Barl, Pa. Patented originally July 2nd, 1850: I claim the employment of a reciprocating gauge plate, when provided with feeding apertures, in combination with corresponding apertures in the hopper bottom, which have their sides oblique to the sides of the apertures in the said reciprocating plate, and when combined with a device for giving it a variable reciprocating motion, for the purpose of sowing the seeds constantly and uniformly, and varying the amount at pleasure, while the machine is moving by simply varying the extent of its reciprocating motion, as described.

I also claim the pivoted rod and the vibratory lever, which is provided with apertures arranged in the arc of a circle, whose centre is at the pivoted end of the rod, in combination with the curved or undulating discs and the gauge plate, substantially as described, for the purpose of imparting to the gauge plate a reciprocating motion, which may be varied at pleasure by the operator, by inserting the rod in one or another of the apertures in the lever at different distances from its fulcrum.

DESIGNS.

GRATE FRAME—By Jas. L. Jackson, of New York City.

PARLOR STOVE—By N. S. Vedder, of Troy, N. Y

[For the Scientific American.]

Colored Daguerreotypes.

I have long been a reader of your valuable journal, and have been much interested in many of the communications on Electricity and Chemical Science, which have appeared from time to time in its columns. I have been experimenting on Heliochromy during my leisure hours for a few weeks past, and am induced to give you the results of my experiments, in the hope that others may be led to prosecute them more successfully.

The discoveries of M. Niepce Victor, in Heliochromy have been announced to the public for some time; I first saw them on page 3, Vol. 7, Scientific American, but I have heard of no one repeating them. An outline of M. Niepce's process may be found in the "Annual of Scientific Discovery" for the year 1852; it is substantially the following:—Make a solution of the chlorides of copper and iron, about one part of the mixed chloride with three or four of water. The plate to be prepared is to be attached to the positive pole of a galvanic battery, the negative pole of which (a platinum plate) is immersed in the solution, and is then itself immersed for a short time, depending on the strength of the battery. The color of the plate rapidly changes from the chlorine of the mixed chlorides attacking its surface, to a red, lilac, brown, and even nearly black. It should be taken out when the plate has acquired a lilac or brownish tint, if sufficiently coated to hide the silvered surface completely, if not, let it remain a little longer. With a battery of two of the ordinary Grove cups, changed to a Smee's, by removing the porous cups, and charging it with dilute sulphuric acid, so that hydrogen is not evolved too rapidly from the platinum plates, it will take from one to two minutes to coat the plates sufficiently. The plate should now be well washed in rain or distilled water and dried carefully over a spirit lamp. The color changes as the plate is heated through various shades of brown and red, and is at its most sensitive state when it takes a cherry red. It should not, however, be heated much over 212° Fahr., or the surface will scale off. All these operations may be performed in open daylight (avoiding, of course, the direct rays of the sun); indeed, a certain amount of light seems to be necessary, in the preparation of the plate. The plate, if well prepared, will now present a beautiful red enamelled-like surface, partly translucent, but still showing no part of the silvered surface beneath, and is ready for the camera.

The object to be copied, a colored lithograph will answer, is placed in the clear light of the sun, and the prepared plate exposed to it for a time, varying with the brightness of the light, and the prevalence of the active rays in the atmosphere. It takes from two to three hours to produce an impression on the plate, and from five to six to obtain a good picture. If the process be successful, a perfect copy of the original, in form and color, will now be presented on the plate (and it will resemble a miniature painting) but be much finer in detail.

If the plate be dipped, before placing it in the camera, in a weak solution of the fluoride of sodium, the process will be much accelerated and the colors preserved. I have tried various other accelerators—the chlorides of sodium and bromine, the compound bromine and hydrofluorine acid, chlorochromic acid, perfluoride of chrome. They all accelerate the process very much, but diminish the brilliancy of the colors; the hydrofluoric and chlorochromic acids are the best. The hydrofluoric acid acts very well with red and blue colors, but is apt to change the brown and black lines to a dark red. The other is better, but the plate should be exposed to it only for a few seconds.

I have taken very good pictures in an hour and a half, but it generally takes three or four. The most annoying failures sometimes occur from miscalculating the time, as on taking out the plate a fine picture in form and color is found, but not sufficiently developed. In such cases the surface can sometimes be removed by an alkaline solution, and the picture developed. A camera with an aperture in it for viewing the picture, would be a good arrangement.

The pictures resist most of the ordinary chemical agents and heat very well, but are rapidly dissolved by the hyposulphite of soda. In one instance, I brought out a picture which was invisible when the plate was taken from the camera, by using the sulphate of iron and bichromate of potash, but the colors were fainter than the original. In this case chlorochromic acid was the accelerator.

I have not been able to produce colors on the mercurialized plate, though I have not experimented much on it. This presents a difficult but perhaps not impossible problem. It seems to me, though I have not tried it, that one or more colors might be produced in the ordinary picture by exposing the mercurialized image to chemical agents before gilding. The colors in this case would be owing rather to chemistry than to Hillochromy.

M. Niepce says that no bodies but chlorine or chlorides are capable of producing colored images. I am inclined, however, to suspect that when the problem of instantaneous photographic images is solved, that fluorine will be found as one of the principal, if not the principal, agent in their production.

I shall be happy to hear from other experimenters, and shall be much pleased if any of them should make the discovery of instantaneous colored images. Great credit is due to MM. Becquerel and Niepce for their discoveries, and also for the readiness with which they have made them public. I intend to devote a part of the little leisure time I have to the prosecuting of this interesting subject.

JAS. CAMPBELL.

Dayton, Ohio.

P. S.—I omitted to mention that the plates sometimes become solarized by long exposure. When this is only partial the picture may sometimes be restored by alkaline solutions. A thin coating of some colorless varnish is also very advantageous to the picture. The pictures accelerated with the fluoride of sodium or the chlorochromic acid seem to be quite permanent in ordinary diffused light.

Submarine Telegraph.

By our latest European exchanges we learn that in a few weeks will be completed a second line of electric communication, in connection with the Continental telegraph. It has been promoted by the European Telegraph Company, and one of its peculiar novelties is that it is being laid down along the old coach road, through Deptford, Greenwich, Shooters-hill, Dartford, Gravesend, Strood, Rochester, Chatham, Sittingbourne, Faversham, Canterbury, &c., to Dover. As may be known, the South-Eastern Railway Company are the proprietors of the present telegraph, and as the company would not sanction the formation of a second line of telegraph, the plan was devised of laying the wires under ground along the road, similar to those which are conveyed under the London streets to the several telegraph stations. Sanction, was obtained of the different road trusts, and some 200 or 300 workmen are now actively employed day and night on the works. The copper wires, six in number, are encased in gutta percha; and being deposited in a kind of trough, constructed of Kyanised timber, it is laid in a trench dug in the road, some foot and a half from the surface. In order that there should not be the possibility of the wires falling, test boxes, by which the wires are proved, are erected every mile. The works are proceeding with the utmost expedition. A mile and a half is completed every day. According to the present arrangements, the six wires will be so apportioned—two to Paris, two to Brussels, and two for the Mediterranean route. At present it is not known whether there will be any intermediate station between London and Dover. The telegraph is completed as far as Chatham from Cornhill.

Large Boilers.

The Royal Mail steamer Arabia, built for the Cunard line, is now getting her boilers on board. They are of tubular construction, the tubes running athwart-ships, with the furnaces of the two boilers facing each other. The boilers are shipped in sections, and riveted together in the hold of the ship. They are the largest boilers ever constructed, and are intended to supply steam to the largest engine ever built.

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TO CORRESPONDENTS.

M. A. H., of N. Y.—You cannot get a patent for the eccentric on the main shaft attached to a pitman; it is a common device applied to pumps, stampers, &c., and is common property to apply to any machine for the same purpose A chimney on a height will give the best draft. A brick flue is better than a pipe of metal in its nature, but it is not of such a good form inside for the draught.

E. W ,of N. Y.—Your example about the ball requires to be more carefully repeated. The earth travels in its curved orbit just as far in 24 hours as it would do in a straight line.

A. R., of N. C.—In the discharge of a cannon, the elasticity of the gases suddenly liberated by the ignited powder, acts equally in all directions.

A. B. M., of Texas.—Cast-iron cranes should not be loaded with more than one-tenth of the weight that will break them, and when they are intended to lower heavy bodies by means of brakes, their load should not be more than one-twentieth of the breaking weight.

A. R., of N. H.—The essential principles of statics and dynamics apply equally to fluids and solids.

W. M , of Mo.—The intensity of the magnetic force is greatest at the poles, and diminishes towards the equator.

A., of——— —The statistics of the P. O. Department would be very useful if printed on the envelopes, but it never would answer to ask for the names of the different places of our country to be printed on them —it would not pay.

J. M. P., of Tenn.—We should not wish to undertake your case after its passage through other hands, as no doubt your agent will do the best he can for you. You could not patent the wheel.

L. K., of N. Y.—We recommend you to obtain Minifie's Mechanical Drawing Book, price $3.

R. B. W., of N. C.—We do not know of any submarine examiner for sale. Willard Day, of Brooklyn, N. Y , is the patentee of an apparatus for the purpose, and might furnish you with one.

G. W. C., of Pa.—We think your improvement in constructing fire places and flues is new and patentable at least we do not remember to have seen any thing like it.

W. D., Jr., of Pa.—There are some things about your rotary engine which are new to us, but we cannot see what advantage you gain over the one illustrated in No. 18, Vol. 4, Sci. Am.

J. Y S., of Pa.—We have never known of a cider mill embracing the improvement described in yours of the 11th inst, but it is quite common in oil presses. We have seen them so constructed, therefore you could not obtain a patent for its application to a new purpose.

J. A., of Mass.—Minnifie's Mechanical Drawing Book treats upon all branches of the art. The price of the book including pre-payment of postage is $3,50. We can give no information in regard to the rule. We have placed the $1 to your credit for an additional six months subscription.

J. D. B., of Ala.—There are no good low priced works upon architecture. The American House Carpenter is useful and is sold for about $2.

I. W M., of Vt.—The form of the lathe could not be secured by a patent, the machine could, in our opinion, be secured. The Alcott lathe is a good one, we know of none better, but cannot advise you respecting the market for handles here.

N. A., of Ne.—We have no doubt of the success of your invention when fairly brought out. The cause of its failure is doubtless owing to defective workmanship. The latter is important to the success of every mechanic.

H. B. G., of Ill.—We are not able to give you the required information about the "grits". The paper will be sent to your address regularly. It has been directed to the wrong State.

R. T., of Phila.—Your measuring apparatus appears to be very simple, but we cannot undertake to furnish you with a party who would engage in their manufacture. This object might be accomplished by an advertisement.

A. S. A., of Conn.—You could not patent the application of any well-known method to a new purpose. It is not regarded as an invention. An invention may be publicly used two years before making an application for a patent, but it is not always safe to take advantage of this provision in the law.

J. C. S., of N. Y.—We do not as yet understand the manner in which examinations will be conducted under Mr. Ray's prizes. We suppose the investigations will be conducted a week at least before the close of the exhibition.

C. F. O., of Mass.—If your method of disconnecting car wheels from axles while turning curves would be useful providing it does not increase the liabillty of throwing the cars off the track. Your suggestions are quite new to us in regard to connecting and disconnecting the wheel. If it has ever been tried we have no knowledge of the fact. Submit the matter to an experimental test, this is the only and surest way.

J. D. R., of Phila.—We will attend to your communication next week

A. R., of N Y.—You may depend upon it, the coke brick is all moonshine, so far as cheapness is concerned. Common clay brick can be rendered water-proof in the same manner. The extract in the Post must be taken from a foreign journal.

C. B. G., of Conn.—We do not remember to have seen a carpenter's bevel constructed in the manner shown in your communication. If it is useful a patent might be granted for it. It is a very difficult point to decide what view the Commissioner of Patents might take of it.

R. S. B., of Col. H.—If we published your letter you would regret it; you will find that ice contains 140 deg. of latent heat, the trade winds are not caused by the rotation of the earth on its axis; and the telescope has a 13 feet aperture; all these statements are facts, and you would not like to see authorities quoted to make people smile at the corrector being corrected for his want of correct information.

L. A. S., of N. Y.—We sent your note to Mr. Wells, He is a millwright and can doubtless furnish you.

S. C. K., of Wis.—Your favor of the 5th inst. covering 15 came safe to hand Gillespies work on road making is the best one we know of. A. S. Barnes & Co., 51 John street, N. Y., publishers. Price about $2.

J. S., of N. Y.—You are mistaken about the tin pipes, they are not so good for radiating heat as those made of iron. We could not advise you to use 10 inch tin pipe upon any consideration. You are right about the collapse, if a vacuum is allowed to be formed in such tubes; this can be prevented by having a light valve opening inwards.

S. S., of S. C.—We have referred your letter to a manufacturer for attention.

W. L. B., of Pa.—Your proper course will be to visit large agricultural warehouses like A. B. Allen & Co., or John Mayer & Co., of this city. It would give us considerable trouble to furnish a list as complete as you would require.

F. S. C., of Mass.—We regard your boiler arrangement as a novel contrivance, and have no doubt of its patentability. You will need to test its working capabilities. The two other devices we cannot regard as patentable.

Z. B., of N. Y.—You are right about the decision of the judge respcting the height of a smoke pipe on the Ohio river boats, but the height is an entirely different question from the length. The spiral pipe would increase the evil; the shorter the horizontal flue the better, and the higher the chimney the better. The philosophical reasons were set forth in our last volume while discussing this case.

Money received on account of Patent Office business for the week ending Saturday Oct. 16:—

N. C., of Ct., $10: A. O., of N. Y., $50; S. B., of Ind., $30; J. E., of R. I., $15; R. & S., of N. J., $30: W. C., of Ct., $30; E. Van. C., of Pa., $25; G. P., of N. Y., $20; S. & K., of Pa., $20; J. D. C., of N. Y., $25; T. M., of Pa., $50; H. F. P., of N. Y., $7; J. E. W., of Pa, $30; N. G. N., of Mass., $30; M. & D., of Mass., $30; S. R., of N. Y., $5; J. S., of Mass., $25.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Oct. 16:

B. C. B., of N. Y.; T. & M., of Mass.; J. F. J., of N. C. T. B., of Mass.; G. W. S., of Ohio; J. D. C., of N. Y.; H. F. P., of N. Y.; H. & L., of Mass.

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The amended postage law, as enacted by the last Congress, having gone into effect on the 1st inst., we take occasion to make an extract from one of the sections, from which our mail patrons will see that the item of postage on the Scientific American will in future be less by one-half than formerly.

"Any periodical or newspaper, under three ounces in weight, can be sent to any part of the United States for one cent, and if paid quarterly or yearly in advance, either at the office of mailing or delivery, will be transmitted by the mails for half a cent each number; that is, for a daily paper, the postage will be only thirty nine cents a quarter, or one dollar and fifty cents a year; a weekly paper or periodical will be charged only six and a half cents a quarter, or twenty-six cents a year. If the weight does not exceed an ounce and a half, it may be circulated in the State where published at half of the above rates."

According to the above extract, subscribers to the Scientific American, residing in the State of New York will receive their papers by mail at thirteen cents per annum, instead of thirteen cents per quarter as formerly, thus reducing the cost of the Scientific American thirty-nine cents per annum to mail subscribers—an item worth saving.

Subscribers in the most remote part of the country will be required to pay but six and a half cents per quarter in future for the Scientific American, and although some postmasters may insist upon higher rates, our patrons should resist the attempt to extort money from them by any pretended construction of the more obscure points in the statute which tends to such an end.

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Persons desiring the claims of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office;—stating the name of the patentee, and enclosing one dollar as fee for copying.

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A RARE CHANCE—TO MACHINISTS—Assignee's sale of Machinists' Tools: these tools have been in use about four months, and consist of Planers, Lathes, Drill Presses, and Universal Chucks, which are for sale from 20 to 25 per cent. less than cost. For particulars address (post-paid) JOHN PARSHLEY, New Haven, Ct. 49tf

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SCIENTIFIC MUSEUM.

The Hillotype.

Professor Morse, the inventor of the magnetic telegraph, publishes a long letter in the National Intelligencer of the 8th, sustaining Mr. Hill's claim of having discovered the mode of fixing the colors in daguerreotypes. The letter is dated Oct. 4th; and Mr. Morse, who, as an accomplished artist and colorist himself, would be presumed a competent judge, says that he has seen twenty specimens of Mr. Hill's colored daguerreotypes.—The most of these were, he says, like all those of M. St. Victor, "copies of colored engravings." They were taken by the camera, and not, as has been reported, "mere transfers of colored prints;" but all were not "copies of colored engravings." Two were exquisitely beautiful portrait heads from life, and one a full length of a child from life. One a landscape view from nature, principally buildings which, although imperfect in parts, served from that very circumstance to verify to me the genuineness of the discovery. The colors in Mr. Hill's process are so fixed that the most severe rubbing with a buffer only increases their brilliancy, and no exposure to light has as yet been found to impair their brightness. They are produced in twenty seconds. Mr. Hill has been suffering from hemorrhage, which has interfered with his labors, but Morse says:—

Mr. Hill has made a great discovery. It is not perfected. There is much yet to be done to make it perfect, but he is in advance of all others, and has, within the year, successfully overcome two of his difficulties. Both yellow and white were defective in quality and truth a year ago—both are now comparatively obtained. There are other colors which, in order to make them so true as to satisfy an artist's mind, will require yet further experimenting. Is not this reason enough for not at present giving his process to the public? Who has a right to demand him to reveal it to the public now? Who, indeed, has a right to demand it at any time?—[Philadelphia Ledger.

[Nobody, so far, as we know, has ever demanded of Mr. Hill, to reveal his alledged discovery; the public have a right to demand proofs of a discovery from a man who has publicly professed to have made it. This is all the public has done to Mr. Hill, and it would be more to the credit of himself and such friends as Mr. Morse, to produce public proofs of this discovery. It is at least two or three years since the discovery was pretended to be made. Nobody wants the process, but we want facts, and not talk about it.

Hobbs and Chubb Again.

The London correspondent of the U. S. Gazette says:—

"The directors of a well known insurance office in Moorgate street, had assembled at their rooms last week to hold an important meeting. When the books and papers of the company were called for, the secretary could not find the key of the large vault where they were kept. After an unsuccessful search, Mr. Chubb, the maker of the large iron door and lock was sent for, and was asked if he had a key that would open the lock. He replied in the negative. He was then asked if he could pick the lock. He again replied in the negative, and rather indignantly withal, at the insinuation that his celebrated locks could be picked! The directors asked what was to be done? Mr. Chubb answered that the only method by which the books and papers could be procured was to cut the door down. The directors would not consent to such a proposition, and Mr. Chubb left the premises. A messenger was dispatched to Cheapside for the American, Hobbs, who sent one of his workmen, with instructions to take an impression in wax of the keyhole of the lock. The man departed, and in a few minutes returned with the impression. Mr. Hobbs then selected a few simple instruments, and accompanied his workman to the insurance office. After operating on Chubb's lock ten minutes only, the bolt was turned, the door was opened, and all the books and papers were placed before the Board of Directors, and to their utter astonishment!"

Race of Clippers from Canton.

A Liverpool paper says:—"Great interest has been excited from the fact that five of the most celebrated clippers, two English and three American, are now on their way to this port and the port of London, with cargoes of tea. Though the time of starting differs, there will be opportunity sufficient afforded for testing the respective merits and qualities of the craft. The Chrysolite, for Liverpool, and the Stornaway, for London, both English, sailed on the 4th of July. The Surprise and the Challenge, for London, and the Race Horse, for Liverpool, (all American,) sailed on the 15th of July. We may add that not a few wagers are pending on the result."

MINING MACHINERY.

Figure 1.

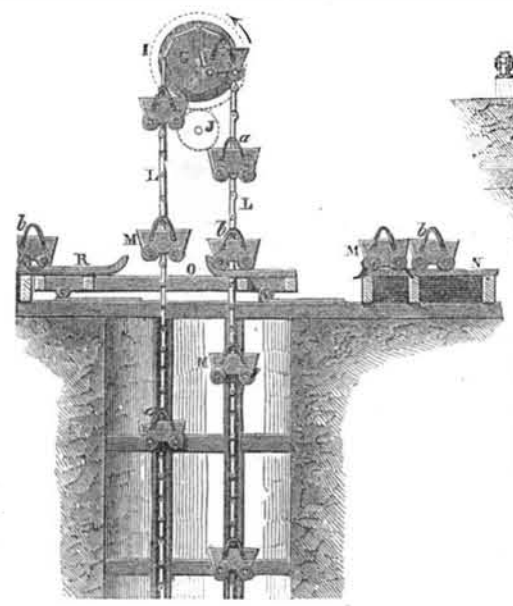
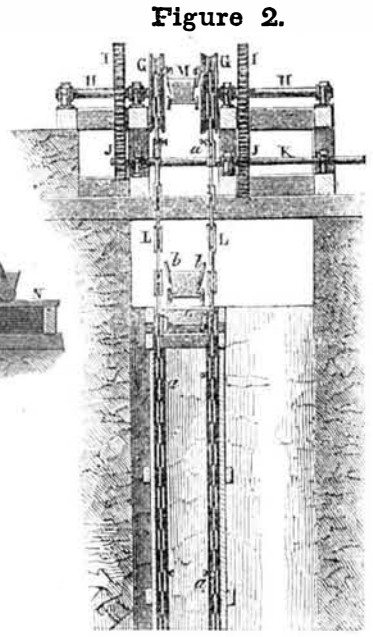
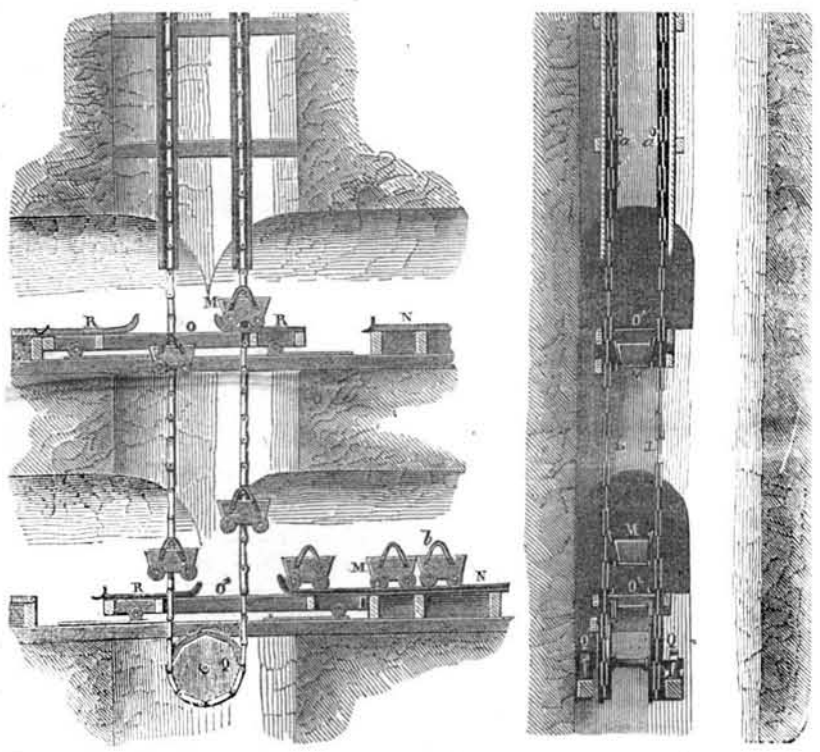


Figure 2.





The machinery which we have here illustrated is for raising metals and minerals from deep mines. It is the invention of M. Cave, a machinist of Paris; it was illustrated and described in the "Le Genie Industriel," from which this is a translation, so altered as to render it clear to our American readers. The plan of Mons. Cave is quite different from any heretofore in use, and does him no small amount of credit. It is applicable in raising heavy loads, whether in working mines or coal pits, and affords a continuous self-acting hitching-on of the loaded cars or buckets.

Fig. 1 is a side view of the succeeding figure. Figure 2 represents a front view of the apparatus, with section of the cranks with which it is attached.

It will be seen that this apparatus is composed of two parallel pullies, G G, with octagon faces between the flanges, and mounted at each end of the axle are iron shafts, H, which are each controlled by the cog wheels I, into which mesh upright pinions, J, mounted on the axle of the shaft, K, this last being none other than the movable axle or crank, which receives its rotary movement from a steam engine or power wheel.

On the face of the two pullies G, pass the endless chains, L L, of which the links are of the exact length of each side of the octagon. Each of these chains carries, at fixed distances, the gudgeons or projecting buttons, *a a*, for the purpose of suspending the wagons, M, in ascending or descending. These wagons are simple boxes placed on four wheels; they are provided on each side with iron handles or ears, *b b*, which place themselves on the buttons, *a a*, of the chains at the instant they pass, as represented.

Allowing the mine to have two galleries, at the height of the first gallery, the wagon M, (which has been conducted either directly by the railroad, N, or by the intervention of a horizontal movable frame work, O) is suspended by the buttons to the two ascending sides of the chain, and, being thus carried away by the chain is inevitably carried to the top of the apparatus. It then descends (always suspended by the same buttons) directly upon a railroad, R, placed at the entrance of the pit, and which carries it from thence to the spot where it is desired to empty it.

In the descent of the chains to the bottom of the pit, where they pass over two parallel pullies, Q Q, similar to the first, and both mounted on the same axle, they are enabled to serve a number of successive galleries situated at different heights. In the engraving are shown two galleries placed at a little distance from each other.

When the same apparatus is enabled to effect at the same time the ascent of the loaded wagons, and the descent of the empty ones, the constructor places at the entrance of the pit, and at the mouth of each gallery, chariots or movable frame work, O, O′, O″, which are made simply of a wooden frame on four wheels which carries to each end, sections of the rails, R, for the purpose of receiving successively each of the wagons which ought to approach the chain either in ascent or descent This frame work thus receives a strong impetus from a mechanical power very simple which has been applied by M. Cave, or the wagons can be drawn part of the way along the galleries by horses, as is common in some coal mines, and then pushed between the chains by hand, to be hitched on by the catch buttons, *a a*. The endless chains are composed of long links which, at certain distances, are provided with gudgeons or projecting buttons, *a a*, upon which the car is supported or hinged by the aid of these gudgeons made in a flattened oval form.

Mining is well enough understood in America, for there are thousands of miners among us who have had great practical experience; but although this is true, there is no such a thing as mining practiced as it is conducted in Europe. The reasons for this are sufficiently obvious; the newness of our country, and the absence of any necessity as yet for the working of deep mines. None of our coal mines are deep, but the time is coming when we will have to dig deeper in search of both coals and metallic ores; this engraving will then be remembered and its merits appreciated. In presenting such apparatus and plans, our object is to exhibit improvements which may be required for useful operations, present or prospective.

LITERARY NOTICES.

German Pronouncing Dictionary.—Welk & Wieck, of Philadelphia, have just published a pronouncing German Dictionary (German & English, and vice versa), by J. C. Oehlschlager, Prof. of Modern Languages in Philadelphia. The pronunciation of the German part, and the manner in which the genitive case, plural number, is indicated, are novel in works of this size. This book is for the pocket, is well printed, contains 850 pages, and is sold for the low price of $1. The author has had long experience as a teacher of languages, and has endeavored, very successfully, to present a pronunciation of a universal character, understood in all Germany, although the varieties of pronunciation in different States of that country present far greater incongruities than those of the county dialects of England and Scotland. This is an excellent work, and we recommend it to all students of the German language.

Book of teh World—The publishers Messrs. Weik & Wieck, of 195 Chestnut street, Philadelphia, have furnished us with two numbers of a beautiful monthly Encyclopedia, containing interesting and amusing stories in natural philosophy, history, &c. &c. Each number of the Book of the World contains 32 pages letter-press, a steel engraving, and three superbly colored plates, illustrating objects of natural history, ornithology, entomology, etc. The work will be a splendid affair when completed, and is astonishingly cheap for the price at which it is sold—25 cents per number; 12 numbers complete a volume. Subscribers should address the publishers as above.

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